

## CLAIMS

What is claimed is:

1. A method of producing a thin cross-section of a material, comprising the steps of:  
depositing a mask on said material using a focused ion beam;  
etching said material around said mask using anisotropic etching.
2. The method of Claim 1, wherein said anisotropic etching comprises reactive ion etching.
3. The method of Claim 1, wherein said mask comprises a line of platinum.
4. The method of Claim 1, wherein said mask is between 80 and 200 nanometers wide.

5. A method of preparing a transmission electron microscope sample,  
comprising the steps of:  
depositing a mask pattern on a first material using a focused ion  
beam, said mask pattern deposited using a second material  
5 having a different selectivity to etching than said first  
material;  
etching said material using anisotropic etching to produce a sample  
that is sufficiently thin to allow imaging in a transmission  
electron microscope, said anisotropic etching being more  
10 selective to said first material than said second material.
6. The method of Claim 5, wherein said anisotropic etching comprises  
reactive ion etching.
7. The method of Claim 5, wherein said mask comprises a line of  
platinum.
8. The method of Claim 5, wherein said sample after preparation is  
between 80 and 200 nanometers thick.
9. A method of preparing a transmission electron microscope sample,  
comprising the steps of:  
depositing a thin oxide layer on a material;  
depositing a mask on said material using a focused ion beam;  
5 etching said material using anisotropic etching to produce a sample  
that is at least partly transparent to a transmission electron  
microscope.

10. The method of Claim 9, wherein said anisotropic etching comprises reactive ion etching.

11. The method of Claim 9, wherein said mask comprises a line of platinum.

12. The method of Claim 9, wherein said sample is between 80 and 200 nanometers thick.

13. A sample material, comprising:

a thin wall of material suitable for use in transmission electron microscopy;

wherein said thin wall of material is prepared by depositing a mask using a focused ion beam and etching around said mask using an anisotropic etching method.

5

14. The method of Claim 13, wherein said mask comprises a platinum line.

15. The method of Claim 13, wherein said anisotropic etching method comprises reactive ion etching.

16. The method of Claim 13, wherein said thin wall is between 80 and 200 nanometers thick.